30. A magnetic lens according to claim 23; wherein the second pole section has a bowl shape with an open end facing the first pole section and an opposite end facing the sample.

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ADDITIONAL FEES:

A check in the amount of $264.00 is enclosed to cover the cost of 1 additional independent claim in excess of 3 and 10 claims in excess of 20 total. Should the check prove insufficient for any reason, authorization is hereby given to charge any such deficiency to our Deposit Account No. 01-0268.

IN THE ABSTRACT:

Delete the abstract now of record and insert therefor the new abstract submitted herewith on a separate sheet.

REMARKS

In order to place this application in condition for a complete action on the merits, the specification has been suitably revised to correct informalities and to place it in better conformance with U.S. practice. Claims 1-8 have been amended in formal respects to improve the wording and bring them into better conformance with U.S. practice. Attached

hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached pages are captioned "**VERSION WITH MARKINGS TO SHOWN CHANGES MADE**."

To obtain a fuller scope of coverage, new claims 9-30 have been added. Adequate support for the subject matter recited in these claims may be found in the specification as originally filed.

Early and favorable action on the merits are respectfully requested.

Respectfully submitted,
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MAILING CERTIFICATE

I hereby certify that this correspondence is being deposited with the United States Postal Service as first-class mail in an envelope addressed to: Commissioner of Patents & Trademarks, Washington, D.C. 20231, on the date indicated below.

Bruce L. Adams
Attorney Name

_____
Signature

DECEMBER 12, 2002
Date

"VERSION WITH MARKINGS TO SHOW CHANGES MADE"

IN THE SPECIFICATION:

Paragraph beginning at line 8 of page 1 has been amended as follows:

[For example, in] In order to perform inspection or observation of the shape of a fine pattern using an electron beam device, [conventionally] various electron beam devices such as a scanning electron microscope have conventionally been used, and in particular, there has been a high demand for high resolution observation accompanying the fact that electron beam devices have become ultra fine in recent years. As an electromagnetic lens enabling high resolution observation, Japanese patent laid open No. Hei. 6-24106 disclosed a structure where a decelerating electrical field is caused to overlap a lens magnetic field, reducing the spherical aberration factor Cs and chromatic aberration factor Cc.

Paragraph beginning at line 11 of page 2 has been amended as follows:

Although not shown in Fig. 5, in an actual lens barrel a vacuum tube, a collimating lens, a deflector, an air lock valve and a movable aperture are arranged between an

electron beam generator and an objective lens. Accordingly, when a high voltage is applied to each of these elements, as described above, measures, such as providing an optical system, are required to cope with this. Further, problems arise such as damage and electron beam charging due to electrical discharge from the high voltage sections, and it is easy for disadvantages such as cost increase, and increase in the frequency of maintenance to occur to a significant increase in the number of components. There is proposed a structure where midway along the inside of lens barrel, the potential falls from a high potential to ground potential with advancement of an electron beam and a high potential is applied again to the electrode RE, but it becomes necessary to take into consideration a lens operation at voltage varying sections, and there is a separate problem that an electron optical system is made complicated.

Paragraph beginning at line 32 of page 2 has been amended as follows:

Another object of the present invention is to provide an electromagnetic field superimposed lens and an electron beam device using this electromagnetic field superimposed lens that can solve the problems described above that exist in the related art and which results in [using]

simplification of the structure, and particularly [that] enables stable and high resolution observation with a low acceleration sample irradiation voltage.

Paragraph beginning at line 9 of page 5 has been amended as follows:

Fig. 1 is a cross sectional drawing showing one example of an embodiment of an electromagnetic field superimposed lens of the present invention. The electromagnetic field superimposed lens 1 (or compound lens) is constructed as an objective lens for an electron beam device such as a scanning electron microscope used to examine or observe the shape of a micro-electronic device, and is an electrostatic collimating lens having a structure where an electrical field type bi-potential lens 3 built in to a magnetic field type lens 2, a magnetic focusing action is imparted to an electronic beam penetrating along an optical axis X due to the magnetic field type lens 2, and at the same time a decelerating electrical field due to the electrical field type bi-potential lens 3 is superimposed on the magnetic field to reduce an aberration factor of the lens, so as to enable high resolution observation.

Paragraph b ginning at lin 4 of page 6 has be n amended as follows:

On the other hand, the second magnetic pole 212 is formed substantially in a bowl or conical shape, with a large diameter opening edge section 212A, begin one end of the second magnetic pole section 212, being fixed to a tip section 211Ba of the overhanging section 211B via the insulating body 213. The insulating body 213 is an annular body corresponding to the size and shape of the other end edge 211Ab and the main section 211A, and the overhanging section 211B is integral with the second magnetic pole section 212 via the insulating body 213. The tip section 212B of the second magnetic pole section 212 faces the other end edge 211Ab of the main section 211A with a specified distance between them, and in this way magnetic gap G is formed. A passage hole 212C for allowing passage of the electron beam is provided in the tip section 212B, coaxially with the optical axis X.

IN THE CLAIMS:

Claims 1-8 have been amended as follows:

1. (Amended) An electromagnetic field superimposed lens [,] having an electrical field bi-potential lens accommodated within [provided in] a magnetic field lens: [,] wherein

a magnetic pole of the magnetic field lens is divided into a first magnetic pole section to which [at] an earth potential is applied during use, and a second magnetic pole section [,] facing a sample, [to which] a negative potential being [is] applied to the second magnetic pole section and [, as well as] to the sample during use, and the first and second [two] magnetic pole sections being electrically insulated from each other; [,] and

the electric field bi-potential lens comprises [is made up of] an electrode connected to the first magnetic pole section so as to surround an electron beam path of the superimposed lens, and the second magnetic pole section.

2. (Amended) An [The] electromagnetic field superimposed lens according to [of] claim 1; further comprising an electrically insulating member disposed between confronting ends [, wherein the electromagnetic pole is formed by making one end] of the first and second electromagnetic pole sections [section and one end of the second magnetic pole section] such that the first and second electromagnetic pole sections and the electrically insulating member form an integral body [via an electrically insulating member].

3. (Amended) An [The] electromagnetic field superimposed lens according to [of] claim 2; further

comprising an [, wherein the] excitation coil [is] attached to an overhang portion of the first electromagnetic pole section extending radially from the electron beam path; wherein [, another end of] the second magnetic pole section extends [getting narrower] from the electrically insulating member towards the sample and becomes narrower in cross-sectional diameter as it approaches the sample, and [, to form] a magnetic gap is formed between ends [the other end] of the first and second magnetic pole sections closest to the sample [section and the other end of the second magnetic pole section].

4. (Amended) An [The] electromagnetic field superimposed lens according to [of] claim 3; [,] wherein a [the] magnetic pole of the superimposed lens is formed [opposite an end section] on a sample side of the second magnetic pole section.

5. (Amended) An electromagnetic field superimposed lens [,] having an electrical field bi-potential lens accommodated within [provided in] a magnetic field lens: [,] wherein

a magnetic pole of the magnetic field lens is divided into a first magnetic pole section to which [at] an earth potential is applied during use, and a second magnetic

pole section [,] facing a sample, [to which] a negative potential being [is] applied to the second magnetic pole section and [, as well as] to the sample during use, and the first and second [two] magnetic pole sections being electrically insulated from each other; [,] and

the electrical field bi-potential lens comprises [is comprised of] a high resistance body provided between the first magnetic pole section and the second magnetic pole section so as to surround an electron beam path of the superimposed lens, such that [so as to apply] a potential difference exists between the first magnetic pole section and the second magnetic pole section.

6. (Amended) An [The] electromagnetic field superimposed lens according to [of] claim 5; further comprising an electrically insulating member disposed between confronting ends [, wherein the electromagnetic pole is formed by making one end] of the first and second electromagnetic pole sections [section and one end of the second magnetic pole section] such that the first and second electromagnetic pole sections and the electrically insulating member form an integral body [via an electrically insulating member].

7. (Amended) An [The] electromagnetic field superimposed lens according to [of] claim 6; further comprising [, wherein] an excitation coil [is] attached to an

overhang portion of the first electromagnetic pole section extending radially from the electron beam path; wherein [, another end of] the second magnetic pole section extends from the electrically insulating member [getting narrower] towards the sample and becomes narrower in cross-sectional diameter as it approaches the sample, and [, to form] a magnetic gap is formed between ends of the [other end of the] first and second magnetic pole sections closest to the sample [section and the other end of the second magnetic pole section].

8. (Amended) An electron beam device having [using] the electromagnetic field superimposed lens [of] according to claim 1.